

**IN THE CLAIMS:**

1. (Cancel)

2. (Currently Amended) A system for managing a public key ~~as claimed in claim 1~~ in an environment having a hierarchical network with a domain name at each hierarchy, a DNS server provided at each hierarchy for managing correspondence between the domain name and an address, and hosts accommodated in the network, the DNS server serving to distribute a public key of another host to the host belonging to the network, the DNS server having means for managing the public key and a database for storing the public key of the host belonging to the network and the domain name in a corresponding manner, the method comprising:

when a first host issues an inquiry about a public key of a second host on the information about the domain name, prompting the means for managing the public key to refer to the database, thereby answering the information on the public key of the second host corresponding to the domain name to the first host,

wherein when the DNS server receives an inquiry of the public key of the second host from the first host, if no entry corresponding to the domain name of inquiry is found in the database of the ~~DMS~~ DNS server itself, solution of the inquiry of the public key is recursively entrusted to another ~~DMS~~ DNS server provided with the another means for managing a public key and the database along the hierarchy of the domain name.

3. (Currently Amended) A system for managing a public key as claimed in claim 4 2 , wherein the host provides means for inquiring about the DNS server of the public key of another host, the means serving to inquire about the ~~DMS~~ DNS server of the corresponding public key to the domain name of a target host when a security communication is started.

4. (Cancel)

5. (Withdrawn) A server apparatus connectable a network, comprising:  
a network control unit connected to the network;  
a packet processing unit for transmitting/receiving a packet to the network through the network control unit; and  
an answer processing unit for processing by receiving a first inquiry packet for inquiring about an address corresponding to a domain name of a certain host apparatus or a second inquiry packet for inquiring about a public key corresponding to a domain name of an optional host apparatus received from the network, the answer processing unit having:

an address store unit for storing each domain name of more than one host apparatus connected to network and each corresponding address thereof in a corresponding manner; and

a public key store unit for storing each domain name of more than one host apparatus connected to the network and each corresponding public key in a corresponding manner;

an address processing unit, where if a packet received from the packet processing unit is the first inquiry packet, retrieving any address corresponding to the domain name of the optional host apparatus stored in the address store unit, and then generating an address answer packet for sending the address it to the packet processing unit; and

a public key processing unit, where if a packet received from the packet processing unit is the second inquiry packet, retrieving any public key corresponding domain name of the optional host apparatus stored in the public key store unit, and then generating a key answer packet for sending the public key to the packet processing unit.

6. (Withdrawn) A server apparatus according to claim 5, wherein if the public key corresponding to domain name of the optional host apparatus is not stored in the public key store unit, the public key processing unit generates a forwarding inquiry packet for inquiring about the public key corresponding to a domain name of the optional host apparatus, to at least one other server apparatus connected to the network, and transmits the forwarding inquiry packet to the packet processing unit.

7. (Withdrawn) A server apparatus according to claim 5, wherein the answer processing unit comprises an electronic signature processing unit for adding an electronic signature to the second answer packet if a request for an electronic signature is included in the second inquiry packet.

8. (Withdrawn) A server apparatus according to claim 5, wherein the answer processing unit comprises an electronic signature processing unit for confirming whether an electronic signature added to the second inquiring packet is trusted by using a public key corresponding to an apparatus which transmitted the second inquiry packet.

9. (Withdrawn) A server apparatus according to claim 7, wherein the public key processing unit of the answer processing unit, in the second inquiry packet, if server apparatus to which electronic signature to be added is, assigned, the assigned server apparatus judges whether it is its own server apparatus or not, if it is not its own server apparatus, then generating packet for requesting addition of the electronic signature to the second answer packet to the assigned server apparatus and transmit to the packet processing unit.

10. (Withdrawn) A host apparatus connectable to a network, comprising:  
a network control unit connected to the network;  
a packet processing unit for transmitting/receiving packet to the network thorough the network control unit;  
an address inquire unit for generating a first inquire packet for inquiring address corresponding domain name of optional other host apparatus connected to the network, and the address inquire unit receives a first answer packet answering address corresponding to domain name of the optional other host apparatus through the packet processing unit,

a public key inquire unit for generating a second inquire packet for inquiring public key corresponding to domain name of optional other host apparatus connected to the network and transmit to the packet processing unit, the public key inquire unit receives a second answer packet for answering public key of optional other host apparatus through the packet processing unit, and;

a public key store unit for storing public key included in the second answer packet and domain name of optional other host apparatus in a corresponding manner.

11. (Withdrawn) A host apparatus according to claim 10, wherein the public key inquiry unit retrieve on whether public key corresponding to domain name of the optional other host apparatus is stored in the public key store unit, if not stored, then generate the second inquiry packet.

12. (Withdrawn) A host apparatus according to claim 10, further including electronic signature check unit for checking on whether the electronic signature is correct or not by using of public key of pre-selected other apparatus when electronic signature is added to the second answer packet.

13. (Withdrawn) A host apparatus according to claim 10, wherein the public key inquiry unit selects other apparatus for adding the electronic signature to the second answer packet, and add information for assigning selected the other apparatus to the second inquiry packet.

14. (Withdrawn) A host apparatus according to claim 12, wherein the public key inquiry units selects other apparatus to add electronic signature to the second answer packet, and to add information assigning the selected other apparatus to the second inquiry packet.

15. (Withdrawn) A host apparatus according to claim 10, further including a security communication unit for carrying out security communication with the optional other host apparatus by using the public key obtained by the second answer packet.